IN THE CLAIMS

Claim 1 (currently amended): A computer implemented method for logically evaluating a Boolean expression used in a query statement, wherein the Boolean expression refers to an attribute and includes a plurality of conditions~~(C1, C2, C3)~~, comprising ~~the steps~~:

receiving~~(410)~~ the Boolean expression~~(310)~~;

decomposing ~~(420)~~ the Boolean expression~~(310)~~ into the plurality of conditions~~(C1, C2, C3)~~;

for each condition of the plurality, extracting ~~(421)~~ from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;

inserting ~~(422)~~ the at least one condition value in a condition value list in sorted order;

initializing ~~(423)~~ a relationship vector for the at least one condition value; and

adjusting ~~(424)~~ the relationship vectors for the at least one condition value and for each further condition value that is in the condition list and that is in the value range of the condition.

Claim 2 (currently amended): The method of claim 1, comprising ~~the further step~~:

reducing ~~(430)~~ the Boolean expression according to each relationship vector.

Claim 3 (currently amended): The method of <u>claim 1</u> ~~claims 1 or 2~~, wherein [[the]] extracting <u>from the condition at least one condition value referring to the attribute comprises:</u> ~~step (421) retrieves~~

<u>retrieving</u> a maximum condition value and/or a minimum condition value of the condition.

Claim 4 (currently amended): The method of <u>claim 1</u> ~~any one of claims 1 to 3~~, wherein [[the]] extracting <u>from the condition at least one condition value referring to the attribute comprises:</u> ~~step (421) retrieves~~

<u>retrieving</u> an identity condition value of the condition.

Claim 5 (currently amended): The method of <u>claim 2</u> ~~any one of the claims 1 to 4~~, wherein <u>initializing</u> the relationship vector comprises:

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<u>initializing the relationship vector as including</u> a LESS THAN component, an EQUAL TO component and<u>/or</u> a GREATER THAN component.

Claim 6 (currently amended): The method of claim 5, ~~where the~~ <u>wherein</u> initializing <u>the relationship vector comprises:</u> ~~step (423) is performed by~~

setting each relationship vector component for the at least one condition value to an initial value if the condition list has no further condition value;

setting each relationship vector component to the LESS THAN component value of the relationship vector for the next greater condition value in the condition value list; or

setting each relationship vector component to the GREATER THAN component value of the relationship vector for the next smaller condition value in the condition value list.

Claim 7 (currently amended): The method of claim 6, <u>wherein adjusting the relationship vectors comprises</u> ~~where the adjusting step (424) is performed by~~:

incrementing at least one relationship vector component for the at least one condition value by an increment to reflect the condition; and

propagating the increment through each relationship vector component for each further condition value in the condition list as long as the further condition value is within the value range of the condition.

Claim 8 (currently amended): The method of claim 7, wherein [[the]] reducing <u>the</u> Boolean expression~~step (430)~~ comprises:

identifying an AND-subset~~(201)~~ of condition values in the condition value list, where each subset condition value has at least one relationship vector component that has a value equal to the increment multiplied by the number of conditions in the plurality.

Claim 9 (currently amended): The method of claim 8, wherein [[the]] reducing <u>the</u> Boolean expression~~step (430)~~ further comprises:

composing a reduced Boolean expression ~~(320)~~ based on the AND-subset.

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Claim 10 (currently amended): The method of claim 7, wherein [[the]] reducing the Boolean expression~~step (430)~~ comprises:

identifying an OR-subset ~~(202)~~ of condition values in the condition value list, where each subset condition value has at least one relationship vector component with the initial value.

Claim 11 (currently amended): The method of claim 10, wherein [[the]] reducing the Boolean expression~~step (430)~~ further comprises:

composing a reduced Boolean expression ~~(320)~~ based on the OR-subset.

Claim 12 (currently amended): The method of claim 8, further comprising:

if the AND-subset ~~(201)~~ is empty, sending a corresponding notification to a user.

Claim 13 (currently amended): The method of claim 10, further comprising:

if the OR-subset ~~(202)~~ is empty, sending a corresponding notification to a user.

Claim 14 (currently amended): The method of <u>claim 2, wherein reducing the Boolean expression comprises:</u> ~~claims 9 or 11~~,

<u>composing a reduced Boolean expression,</u> where the reduced Boolean expression ~~(320)~~ comprises a condition that merges at least a first condition and a second condition, the first and second conditions referring to the attribute and representing disjoint intervals, the attribute having no values between the inner interval boundaries of the disjoint intervals.

Claim 15 (currently amended): A computer program product for logically evaluating a Boolean expression used in a query statement, stored on a data carrier, or carried by a signal and comprising a plurality of instructions that when loaded into a memory of a computing device ~~(901)~~ cause at least one processor of the computing device (901) to ~~execute the steps of any of the claims 1 to 14~~<u>:</u>

<u>receive the Boolean expression;</u>
<u>decompose the Boolean expression into the plurality of conditions;</u>

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for each condition of the plurality, extract from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;

insert the at least one condition value in a condition value list in sorted order;

initialize a relationship vector for the at least one condition value; and

adjust the relationship vectors for the at least one condition value and for each further condition value that is in the condition list and that is in the value range of the condition.

Claim 16 (currently amended): A computer system (990) for logically evaluating a Boolean expression used in a query statement, wherein the Boolean expression(310) refers to an attribute and includes a plurality of conditions(C1, C2,C3), comprising: a computing device (901) having a memory to receive (410) the Boolean expression and to store a condition value list; and having at least one processor for executing computer program instructions to:

decompose (420) the Boolean expression (310) into the plurality of conditions(C1, C2, C3);

for each condition of the plurality, extract (421) from the condition at least one condition value referring to the attribute, wherein the at least one condition value defines a value range of the condition;

insert (422) the at least one condition value in the condition value list in sorted order;

initialize (423) a relationship vector for the at least one condition value; and

adjust (424) the relationship vectors for the at least one condition value and for each further condition value that is in the condition list and that is in the value range of the condition.

Claim 17 (currently amended): The computer system (990) of claim 16, wherein the at least one processor further executes computer program instructions to reduce (430) the Boolean expression (310) according to each relationship vector.

Claim 18 (currently amended): The computer system of claim any one of the claims 16 to 17, wherein the relationship vector comprises a LESS THAN component, an EQUAL TO component, and a GREATER THAN component.

Claim 19 (currently amended): The computer system of claim 18, wherein the computer program instructions causing the at least one processor to initialize (423) havecomprise:

a first portion to set each relationship vector component for the at least one condition value to an initial value if the condition list has no further condition value; and

a second portion to set each relationship vector component to the LESS THAN component value of the relationship vector for the next greater condition value in the condition value list, [[;]] or to set each relationship vector component to the GREATER THAN component value of the relationship vector for the next smaller condition value in the condition value list.

Claim 20 (currently amended): The computer system of claim 19, wherein the computer program instructions causing the at least one processor to adjust (424) havecomprise:

a first portion to increment at least one relationship vector component for the at least one condition value by an increment to reflect the condition; and

a second portion to propagate the increment through each relationship vector component for each further condition value in the condition list as long as the further condition value is within the value range of the condition.

Claim 21 (currently amended): The computer system of claim 20, wherein the memory stores an AND-subset (201) of condition values in the condition value list, where each subset condition value has at least one relationship vector component that has a value equal to the increment multiplied by the number of conditions in the plurality.

Claim 22 (currently amended): The computer system of claim 21, wherein the at least one processor executes further computer program instructions to compose a reduced Boolean expression (320) based on the AND-subset (201).

Claim 23 (currently amended): The computer system of claim 20, wherein the memory stores an OR-subset (202) of condition values in the condition value list, where each subset condition value has at least one relationship vector component with the initial value.

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Claim 24 (currently amended): The computer system of claim 20, wherein the memory stores an OR-subset of condition values in the condition value list, where each subset condition value has at least one relationship vector component with a value greater than the initial value.

Claim 25 (currently amended): The computer system of claim 23~~claims 23 or 24~~, wherein the at least one processor executes further computer program instructions to compose a reduced Boolean expression ~~(320)~~ based on the OR-subset ~~(202)~~.

Claim 26 (currently amended): The computer system of claim 21, where the at least one processor executes further computer program instructions to send a corresponding notification to a user, if the AND-subset ~~(201)~~ is empty.

Claim 27 (currently amended): The computer system of claim 23, where the at least one processor executes further computer program instructions to send a corresponding notification to a user, if the OR-subset ~~(202)~~ is empty.

Claim 28 (currently amended): The computer system of claim 22~~claims 22 or 25~~, where the memory stores a list of all values of the attribute; and the at least one processor executes further computer program instructions to merge at least a first condition and a second condition, the first and second conditions referring to the attribute and representing disjoint intervals, the attribute having no values between the inner interval boundaries of disjoint intervals.

Claim 29 (cancelled).